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October 26, 1993

Mr. George Krasnick
294 Awakea Road
Kailua, HI 96734

Dear Mr. Krasnick:

The following comprises: (1) a report on the historical occurrence of snail species of the federally endangered genus *Achatinella* ("O'ahu Tree Snails") in the region of Ka'au Crater; and (2) results of a partial survey of the ridge above Ka'au Crater on October 3, 1993.

(1) Historical occurrences of O'ahu tree snails:

Eight species of *Achatinella* occurred in the area of Ka'au Crater, O'ahu, Hawaii. In the following table, I indicate whether these species occurred on the leeward slope of the Ko'olau Mountains, where Ka'au Crater lies, on the Ko'olau summit above Ka'au Crater, or both. I also indicate when the species was last sighted, although the records may not specify that the sighting was at Ka'au Crater. Where last sighting locations are available, they are included below.

Species	Distribution	Last Seen
<i>Achatinella abbreviata</i>	summit & lee slopes	1963
<i>A. buddii</i>	lee slopes only	1900
<i>A. cestus</i>	lee slopes only	1966
<i>A. fulgens</i>	summit and lee slopes	1989 (above Aina Haina)
<i>A. fuscobasis</i>	summit only	1992 (behind Manoa Valley)
<i>A. phaeozona</i>	summit & windward ridge	1974
<i>A. taeniolata</i>	summit & lee slopes	1966
<i>A. viridans</i>	summit & lee slopes	1979 (Wiliwilinui)

Older records cite several of these species as being very abundant in the inner parts of Palolo Valley, including Ka'au Crater, but there are no records of extensive modern surveys of this area. Based on the older records, I would judge that three to four of these federally endangered tree snails may persist in the region of Ka'au Crater. Very extensive surveys are required to determine the current status of O'ahu tree snails in this area.

(2) Survey of October 3, 1993:

Approach: Our survey party of two (Dr. Stephen E. Miller and Ms. Lisa Hadway) was lifted to the Ko'olau summit directly above (North of) Ka'au Crater at 12:15 p.m. Approximately forty-five minutes were spent searching native vegetation in this region, between the two power lines that span the summit here, for the presence of native snails (Area I). The next one and one-half hours were spent surveying the area from the easternmost power line, along the summit, to the area where a major trail

descends toward Ka'au Crater (AREA II). Finally, the area along the descending trail was surveyed down approximately the upper two-thirds of its extent for one and one-half hours (Area III). These search areas are noted on the accompanying map. The approach used in the survey was to visually locate native vegetation known to serve as habitat for native Hawai'ian tree snails, based on both published records and the surveyors' extensive personal experience.

Results:

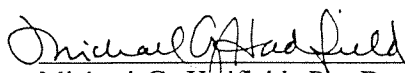
Area I: Potential host vegetation included *Pelea* spp., *Metrosideros polymorpha*, *Antidesma* sp., *Wikstroemia* sp., *Coprosma* spp., and *Freycinetia arborea* (we assume that the botanical expert, Dr. Winona Char, will identify plant species seen in the survey area). Only a single native snail was seen, a small *Tornatellides* sp. on *Pelea* sp.

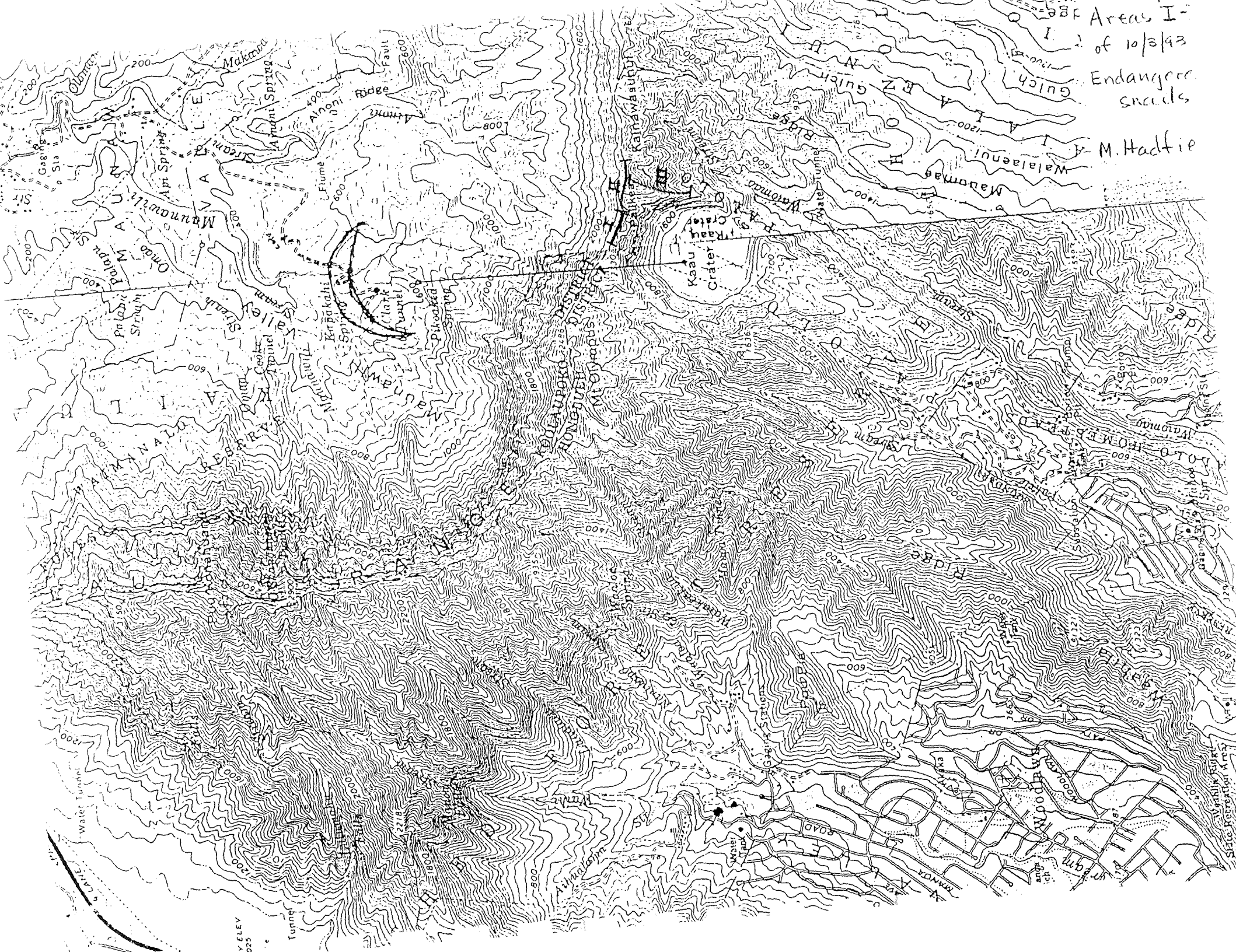
Area II: Vegetation similar to that of Area I. No native snails seen.

Area III: Vegetation includes *Pelea* sp., *Metrosideros polymorpha*, *Freycinetia arborea*, and other native species. No native snails seen.

Conclusions: While no *Achatinella* spp. were seen, very little can be concluded from this extremely limited survey. Total time spent on the ground was three hours and forty-five minutes, and the area surveyed was thus limited to a narrow band of vegetation bordering the summit trail and the descending trail to Ka'au Crater through only part of its length. A more complete survey for endangered O'ahu tree snails in this area would require three to four days on the ground, searching both the outer and inner slopes of Ka'au Crater, the patches of ohia'ia (*Metrosideros polymorpha*) growing on the crater floor, and the very steep slope between the crater floor and the Ko'olau summit, especially the more western ridge between the crater rim and the summit. In addition, because there were historical populations of tree snails on the windward side of the Ko'olau Mountains in this region, for example *Achatinella phaeozona*, and because the proposed construction would disturb extensive areas on the windward slope, surveys are also necessary on the northern Ko'olau slope.

In summary, no *Achatinella* species were observed, but the survey was too cursory to determine the presence or absence of these federally endangered species in the area of Ka'au Crater. If they do occur there, the extensive construction activities proposed would gravely threaten their survivorship.

 10/26/93
Michael G. Hadfield, Ph. D.



Areas I-
of 10/3/93
Endangered
snails
M. Hadfield

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